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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/750,125	12/29/2000	Mitsuhiro Kanada	Q62454	6746
65565 7590 03/14/2007 SUGHRUE-265550 2100 PENNSYLVANIA AVE. NW WASHINGTON, DC 20037-3213			EXAMINER CHANG, VICTOR S	
			ART UNIT 1771	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE			MAIL DATE	DELIVERY MODE
3 MONTHS			03/14/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

09/750,125

Applicant(s)

KANADA ET AL.

Examiner

Victor S. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 and 16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Introduction***

1. Applicants' declaration and remarks filed on 2/8/2007 have been entered. Claims 1-10, 16 and 16 are active.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. In view of the declaration, which shows the experimental differences between "composite metal oxide" and mixture of metal oxides, prior art JP 08-325408 is withdrawn, because JP '408 is silent about the greater flame retardant effect of composite metal oxide. However, a new search is required, and new grounds of rejection are set forth below. Applicants' arguments directed to JP '408 are moot.

### ***Rejections Based on Prior Art***

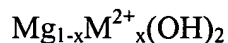
4. Claims 1, 3-10 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/47573 in view of Kurisu et al. [US 6254847].

WO '573 relates to a low-density microcellular thermoplastic elastomeric foams with closed cells. The foam is made using supercritical fluid CO<sub>2</sub> as the blowing agent [abstract]. The polymer and the blowing agent are mixed in the melt stage in a tandem extruder under high temperature and pressure, subsequently the temperature and pressure are reduced to initiate foaming [page 3, lines 9-17]. Additional components of the foams include fire (flame) retardants [page 3, line 7]. Depends on pressure drop rates between 0.1 to 15 GPa, thermoplastic foams

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having various densities between 6 to 14 pcf, and uniform cell sizes of about 100 to 150 microns are obtained [page 4, lines 8-30]. Various foam properties such as the density, cell structure and size, compression set, etc. may be adjusted by varying the foaming conditions [page 5, lines 23-26]. The optimal compression set is less than about 30% [page 5, line 30]. Table 1 shows suitable foam materials include SANTOPRENE<sup>®</sup>, SEBS resin, polyethylene, etc. Further, WO '573 expressly teaches that SANTOPRENE<sup>®</sup> is a blend of polypropylene and ethylene propylene (EPDM) copolymer [page 3, lines 2-5].

For claims 1, 3-10 and 17, WO '573 is silent about the use of composite metal oxide  $\text{MgO} \cdot \text{ZnO} \cdot \text{H}_2\text{O}$  or  $\text{MgO} \cdot \text{NiO} \cdot \text{H}_2\text{O}$  as flame retardant in the thermoplastic foam. However, prior art Kurisu relates to a metal oxide solid solution (hydrated composite metal oxide) in the form of crystal powder by the following formula:



wherein  $\text{M}^{2+}$  denotes at least one divalent metal ion selected from  $\text{Ni}^{2+}$ ,  $\text{Zn}^{2+}$ , etc.,

and x denotes a number in the range of  $0.01 \leq x < 0.5$

The crystal improves fluidity, processability and the like when the solid solutions are kneaded into resins for use as flame retardant additives [abstract; col. 1, line 61 through col. 2, line 1; col. 3, lines 33-34]. It would have been obvious to one of ordinary skill in the art to select and modify the thermoplastic foam resin of WO '573 with a suitable hydrated composite metal oxide such as  $\text{MgO} \cdot \text{ZnO} \cdot \text{H}_2\text{O}$  or  $\text{MgO} \cdot \text{NiO} \cdot \text{H}_2\text{O}$ , motivated by the desire to improve the flame retardant property of the thermoplastic foams with improved processability.

5. Claims 2 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/47573 in view of Kurisu et al. [US 6254847] and Applicants' admitted prior art JP-A-322168.

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The teachings of WO '573 and Kurisu are again relied upon as set forth above.

For claim 2, applicants have admitted that it is known art to impregnate a pre-formed unexpanded thermoplastic molding, as taught by the prior art JP-A-322168 [specification, page 4, paragraph 2].

For claim 16, applicants have admitted that it is well known that expanded materials are used in various pads for the purposes of soundproofing, cushioning, etc. in electronic appliances [specification, page 2, second paragraph].

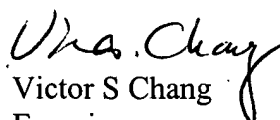
### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor S. Chang whose telephone number is 571-272-1474. The examiner can normally be reached on 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel H. Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Victor S Chang  
Examiner  
Art Unit 1771

3/9/2007